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BRITAIN

5643
1882

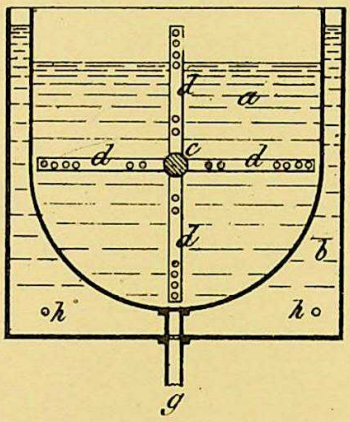
A.D. 1882. Nov. 28. N° 5643.

J. A. L. & W. V. BIDEN'S SPECIFICATION.

(1 SHEET)

257
82

FIG. 1.



drawing

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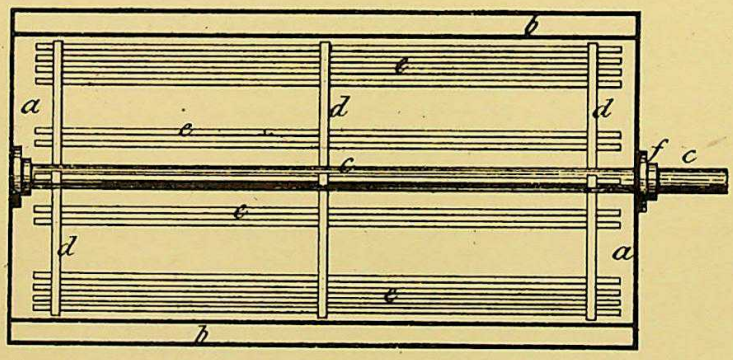
FIG. 2.



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Malby & Sons, Photo-Litho.

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8 2
Mash-tubs-
Rakes.
Du 32
C 257
15
5643
7. BREWING & FERMENTING
MASHING.

A.D. 1882, 28*th* NOVEMBER. N° 5643.

Construction of Mashing Apparatus.

LETTERS PATENT to James Arthur Ley Biden and William Vernon Biden both of the Sea Horse Brewery Gosport in the County of Hants for an Invention of IMPROVEMENTS IN THE CONSTRUCTION OF MASHING APPARATUS Communicated to them from abroad by Narcisse Pigeon of New York in the United States of America

PROVISIONAL SPECIFICATION left by the said James Arthur Ley Biden and William Vernon Biden at the Office of the Commissioners of Patents on the 28th November 1882.

JAMES ARTHUR LEY BIDEN and WILLIAM VERNON BIDEN both of the Sea Horse Brewery Gosport in the County of Hants IMPROVEMENTS IN THE CONSTRUCTION OF MASHING APPARATUS a Communication to them from abroad by Narcisse Pigeon of New York in the United States of America

This Invention consists of a new and improved form of mashing apparatus by means of which perfect control over the temperature of the mash is obtained.

This improved form of mashing apparatus consists of an internal vessel in which the mashing operation is effected by means of a horizontal stirrer or agitator and this vessel is partially enclosed in another and larger vessel or jacket which surrounds the bottom and sides but not the top and not necessarily the ends of the internal vessel. Its ends may however if desired be more or less completely surrounded by the external vessel. The external vessel is so much larger than the internal vessel and is so jointed to it as to form a water tight case or jacket which being filled or partially filled with water becomes a water bath the water in which is heated by means of steam or in any other convenient manner. It is cooled likewise by means of a stream of cold water and an overflow is provided so that the hot water may flow away. This overflow is placed near the top of the external vessel so as to keep it when it is in operation nearly full of water. By heating and cooling the water in the water bath and by keeping the stirrers revolving at a moderate speed perfect control is maintained over the temperature of the contents of the internal vessel which are at the same time perfectly mixed or mashed

[*Price* 6*d.*]

J. A. L. & W. V. Biden's Impts. in the Construction of Mashing Apparatus.

The best form of this apparatus consists of a half cylinder placed horizontally surmounted by vertical sides extending rather higher than the other half of the cylinder would have done if the cylinder had been a complete one. Thus if the cylindrical portion is eight feet in horizontal diameter the semidiameter will be four feet and the height of the vertical sides from four feet six inches to five feet. The ends of this internal vessel are closed water tight and the shaft of the stirrer passes water tight through a stuffing box at each end or through a stuffing box at one end the other end being retained in place by a hollow step or journal in which it works.

The external vessel may have either a square or cylindrical bottom and is made so much larger than the internal vessel as to leave a space of several inches between the two, this space constituting the water bath.

The stirrer consists of a horizontal shaft to which are affixed arms perpendicular to the shaft and extending to within a very short distance of the sides of the cylindrical portion of the vessel. Two or more of these arms are affixed to the shaft at intervals and we prefer to affix four near each end and four more in the middle of the portion of the shaft within the vessel. Rods extending to nearly the whole length of the vessel are passed through holes in and affixed to these arms. A sufficient number of these rods being so affixed as to produce the necessary amount of agitation when the shaft is revolving at a moderate speed. The shaft extends beyond one end of the vessels a sufficient length for the attachment of driving gear.

Both the internal vessel and the water bath are provided with thermometers so as to enable the temperature of their contents to be ascertained.

One or more pipes are affixed for the introduction of steam into the water bath and one or more pipes are also affixed for the introduction of cold water into the water bath. Again one or more pipes are affixed so as to allow the surplus water to flow away to waste and to keep the water from overflowing the top of the water bath. All these pipes may be most conveniently screwed into the plates which close the ends of the water bath. Pipes may also be affixed to the internal vessel for the introduction of steam directly into its contents.

Both internal and external vessels are made of metal plates and the most suitable metals are wrought iron and copper.

The tops of the vessels formed by these metal plates we do not generally close by metal plates but we prefer to enclose the whole external surface of the vessels in a wooden box or chamber which prevents to a great extent the racliation of heat and to the upper edge of this wooden box or chamber bearers are affixed and to these bearers wooden covers of convenient size are hinged.

These covers are arranged so that they can be easily opened and shut and by opening them and keeping the stirrer revolving the cooling of the contents of the inner vessel can be greatly accelerated.

The operations to be carried out in the apparatus we have described are well known and understood. We claim as the invention communicated to us the special form of apparatus described.

SPECIFICATION in pursuance of the conditions of the Letters Patent filed by the said James Arthur Ley Biden and William Vernon Biden in the Great Seal Patent Office on the 28th May 1883.

JAMES ARTHUR LEY BIDEN and WILLIAM VERNON BIDEN both of the Sea Horse Brewery Gosport in the County of Hants "IMPROVEMENTS IN THE CONSTRUCTION OF MASHING APPARATUS" A communication to them from abroad by Narcisse Pigeon of New York in the United States of America

This invention consists of a new and improved form of mashing apparatus by means of which perfect control over the temperature of the mash is obtained.

This improved form of mashing apparatus consists of an internal vessel in which the mashing operation is effected by means of a horizontal stirrer or agitator and this vessel is partially enclosed in another and larger vessel or jacket which surrounds the bottom and sides but not the top and not necessarily the ends of the internal vessel. Its ends may however if desired be more or less completely surrounded by the external vessel. The external vessel is so much larger than the internal vessel and is so jointed to it so as to form a water tight case or jacket which being filled or partially filled with water becomes a water bath, the water in which is heated by means of steam or in any other convenient manner. It is cooled likewise by means of a stream of cold water and an overflow is provided so that the hot water may flow away. This overflow is placed near the top of the external vessel so as to keep it when it is in operation, nearly full of water. By heating and cooling the water in the water bath and by keeping the stirrers revolving at a moderate speed perfect control is maintained over the temperature of the contents of the internal vessel which are at the same time perfectly mixed or mashed.

The best form of this apparatus consists of a half cylinder placed horizontally surmounted by vertical sides extending rather higher than the lower half of the cylinder would have done if the cylinder had been a complete one. Thus if the cylindrical portion is eight feet in horizontal diameter the semidiameter will be four feet and the height of the vertical sides from four feet six inches to five feet. The ends of this internal vessel are closed water tight and the shaft of the stirrer passes water tight through a stuffing box at each end or through a stuffing box at one end the other end being retained in place by a hollow step or journal in which it works.

The external vessel may have either a square or cylindrical bottom and is made so much larger than the internal vessel as to leave a space of several inches between the two. This space constitutes the water bath.

The stirrer consists of a horizontal shaft to which is affixed arms perpendicular to the shaft and extending to within a very short distance of the sides of the cylindrical portion of the vessel. Two or more of these arms are affixed to the shaft at intervals and we prefer to affix four near each end and four more in the middle of the portion of the shaft within the vessel. Rods extending to nearly the whole length of the vessel are passed through holes in and affixed to these arms. A sufficient number of these rods being so affixed as to produce the necessary amount of agitation when the shaft is revolving at a moderate speed. The shaft extends beyond one end of the vessels, a sufficient length for the attachment of driving gear.

Both the internal vessel and the water bath are provided with thermometers so as to enable the temperature of their contents to be ascertained.

One or more pipes are affixed for the introduction of steam into the water bath and one or more pipes are also affixed for the introduction of cold water into

the water bath. Again one or more pipes are affixed so as to allow the surplus water to flow away to waste and to keep the water from overflowing the top of the water bath. All these pipes may be conveniently screwed into the plates which close the ends of the water bath. Pipes may also be affixed to the internal vessel for the introduction of steam directly into its contents.

Both internal and external vessels are made of metal plates and the most suitable metals are wrought iron and copper.

The tops of the vessels formed by these metal plates we do not generally close by metal plates but the whole external surface of the vessels is enclosed in a wooden box or chamber which prevents to a great extent the radiation of heat and to the upper edge of this wooden box or chamber bearers are affixed and to these bearers wooden covers of convenient size are hinged.

These covers are arranged so that they can be easily opened and shut and by opening them and keeping the stirrer revolving the cooling of the contents of the inner vessel can be greatly accelerated.

The operations to be carried out in the apparatus we have described are well known and understood.

And in order that our said invention may be more clearly understood, reference is hereby made to the accompanying Drawings:—

Fig: 1 is a sectional elevation of our improved apparatus, and Fig: 2 a plan of the same.

a is the internal vessel, and *b* the external vessel—*c* is the axle passing through the stuffing box *f*. *d, d* are the arms fitted to the axle *c* and revolving therewith.—*e. e* are iron bars fitted to the arms *d d*. *g* is an outlet pipe for drawing off the water from the vessel *a*. *h h* are pipes fitted to the end plates for passing steam, hot or cold water, or other purposes

Other pipes and connections (not shewn) are also fitted, to accommodate the fitting of thermometers, indicators, steam and other pipes, for regulating the temperature of the fluids contained in the two vessels

Having thus particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we claim:—

The manufacture and use of the special form construction and arrangement of mashing apparatus substantially as hereinbefore described and shewn on the drawings 1 and 2.

In witness whereof we the said James Arthur Ley Biden and William Vernon Biden have hereunto set our hands and seals this twenty fifth day of May in the year of our Lord one thousand eight hundred and eighty three.

JAMES ARTHUR LEY BIDEN (L.S.)
WILLIAM VERNON BIDEN (L.S.)

LONDON: Printed by George E. B. Eyre and William Spottiswoode,
Printers to the Queen's most Excellent Majesty.
For Her Majesty's Stationery Office.

1883.